Semantics of Passing Parameters to Functions

Pass value type by value

Caller's Stack Frame

v

Caller does not see change of value if function changes its copy's value.

F(v)

Stack Frame

Copy of V
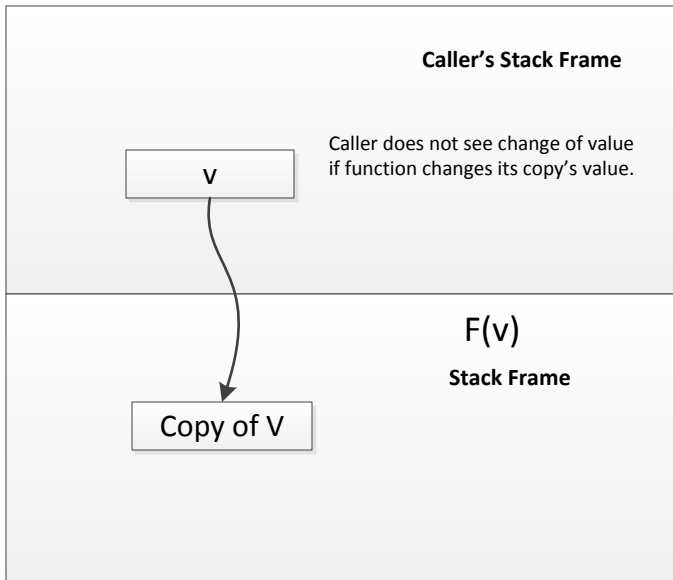
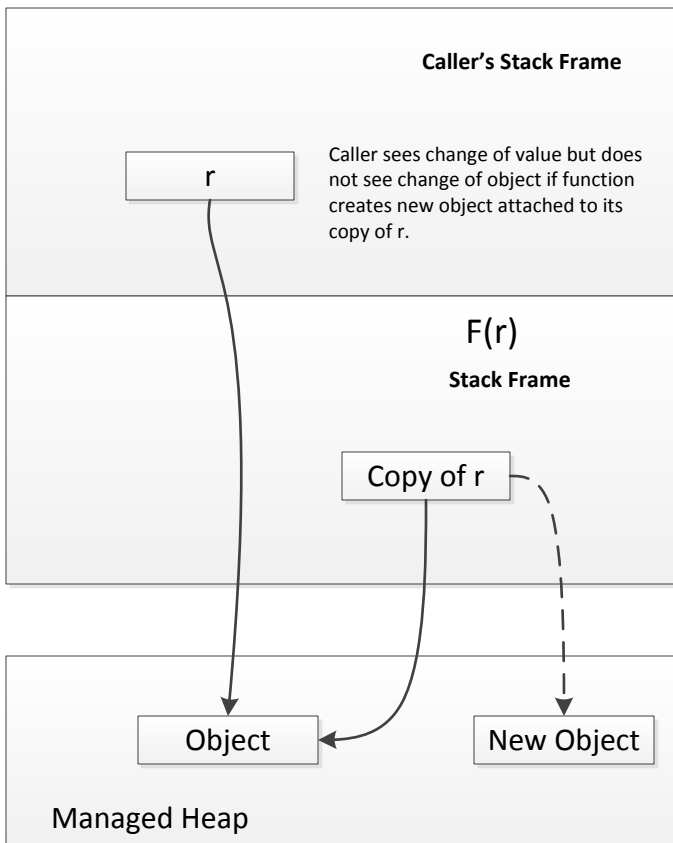## Pass value type by reference

Caller's Stack Frame

v

Caller sees change of value if function changes value through reference..

F(ref v)

Stack Frame

Reference to v

Pass reference type by value

Caller's Stack Frame

r

Caller sees change of value but does not see change of object if function creates new object attached to its copy of r.

F(r)

Stack Frame

Copy of r
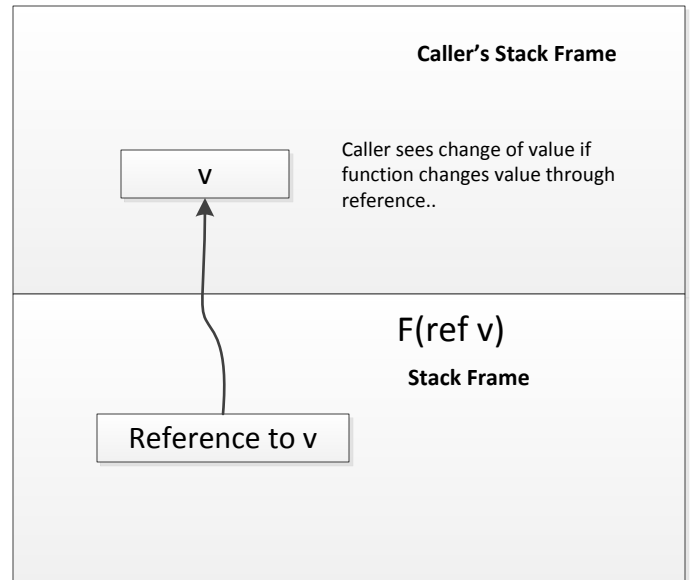
Pass reference type by reference

Caller's Stack Frame

r

Caller sees change of value and sees change of object if function creates new object attached to r through its reference to r.

F(ref r)

Stack Frame

Reference to r

Object

New Object

Object

New Object

Managed Heap